NEW BOOKS

Determination of Radicles in Carbon Compounds. *By H. Meyer and J. Bishop Tingle. Third edition, revised. 13 x 19 cm; pp. xii + 218. New York: John Wiley and Sons; London: Chapman and Hall, 1908. Price: $1.25 net.*—The new matter has been added as an appendix, almost all of the text of the second edition having been retained. In the appendix we find: methods of acetylation; isolation of acetyl derivatives; determination of acetyl groups; benzoyl derivatives; analysis of benzoyl derivatives; acylation by means of other acid radicles; alkylation of hydroxyl groups; preparation and reaction of diphenylcarbonyl chloride: action of phenyl carbimide; determination of hydroxyl by means of alkylmagnesium halides; determination of methoxyl; determination of carboxyl; determination of carbonyl; determination of carbonyl derivatives by hydrolysis; determination of the propenyl group; determination of the ethylene group in amines; determination of the aliphatic amino group; determination of the aromatic amino group; separation of primary and secondary amines by acylating agents; determination of the amido group; determination of the imino group; determination of methylimine; determination of the nitro group; determination of the nitroso group; determination of the azo group; the iodine number; miscellaneous methods.

Since the new portion is more than a quarter of the whole book, it is easy to see that this is a new edition in fact as well as in name. Numerous cross references serve to bind the text and the appendix together.

Wilder D. Bancroft

De la Méthode dans les Sciences. *By H. Bouasse, Pierre Delbet, E. Durkheim, A. Job, F. Le Dantec, L. Lévy-Bruhl, G. Monod, P. Painlevé, Émile Picard, Th. Ribot, J. Tannery, P. F. Thomas. 12 × 19 cm; pp. iii + 411. Paris: Félix Alcan, Éditeur, 1909.*—This volume contains a series of essays on the different sciences each written by a man prominent in that science. The authors are Jules Tannery for pure mathematics, H. Bouasse for general physics, A. Job for chemistry. A. Giord for morphology, F. Le Dantec for physiology, Pierre Delbet for medicine, Th. Ribot for psychology, E. Durkheim for sociology and the social sciences, L. Lévy-Bruhl for ethics, G. Monod for history, P. Painlevé for mechanics, and Émile Picard for science in general.

The essays are distinctly interesting as the following extracts will show. In the essay on physics, p. 76, we read that "physics seeks to reconstruct its portion of the world by deducing it in a purely syllogistic way from one general principle previously admitted." On p. 93 there is a discussion of the demonstration of principles.

"*Principles are not demonstrated.* It is ridiculous and sad that one should be compelled to enunciate such truisms; but if the reader opens some books on thermodynamics, he will find such titles as: Demonstration of the Principle of Equivalence; Demonstration of the Principle of Carnot. Worse than that, one famous scientific man has claimed to give a demonstration of the principle of virtual work. If we stop a moment to think, we shall see the absurdity of such a thing or at any rate the absurdity of such language.

"The *principle*, *postulate*, or *hypothesis* (the three terms are absolutely equivalent) is that which we take as the first proposition of the sorites. To demonstrate a postulate *theoretically*, is to deduce it from a more evident proposition, which is a contradiction in terms. *We do not demonstrate a postulate; we change a postulate.*

"As for demonstrating a principle *experimentally*, that is an undertaking which is obviously absurd. We may demonstrate that certain facts, or even that all the known facts, fall within a certain form and are consequently contained in the principle underlying this form. Obviously, however, we cannot demonstrate that facts of which we are ignorant also fall within this form."

The final paragraph in the essay on chemistry, p. 147, runs something as follows:

"The fundamental fact from which we started is that of the chemical compound. To find the state of these chemical compounds and the laws governing their changes, is the object which gives chemistry its definite character and its distinctive methods. Actually it attempts to explain the compounds as groupings of atoms and the changes as conversions of energy. Is this a permanent conception? No one thinks so; but the question is premature because we do not even know how to connect the first explanation to the second, how to refer the energy to the atoms. Chemistry can perhaps best be considered just as it is, in the form in which it is developing. It appears certain that a long future is assured to it and a fruitful development, especially if it makes use of physics as an instrument and a guide, and seeks in biology its application and its model."

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Handbuch der anorganischen Chemie. *Herausgegeben von R. Abegg. In vier Bänden. Dritter Band, dritte Abteilung. 18 × 25 cm; pp. xiv + 876. Leipzig: S. Hirzel, 1907.*—This volume contains chapters on nitrogen (v. Braun), ammonium salts (Pick), phosphorus (Schenck), arsenic (Schenck), antimony (Schenck), bismuth (Herz), vanadium (Chilesotti) while Brauner has written the chapters on the atomic weights and Lottermoser those on colloids. The most interesting sections of the book are naturally those dealing with nitrogen, phosphorus, and vanadium because these are to most people the more interesting elements. The literature references are surprisingly complete and include the work of Dennis and Miss Isham on hydronitric acid, Cohen's work on explosive antimony and v. Bolton's work on tantalum. The discussion of the oxidation of phosphorus is very good indeed, but it is certainly a mistake to say that phosphorus is made commercially in an arc furnace. It is generally believed that the furnace in commercial use is a resistance furnace, the current passing through the fused charge. Under the catalytic action of vanadium the reviewer did not find the conversion of hypochlorites into chlorates though it may perhaps be there. Like the other volumes of the series this is an invaluable reference book and the set will undoubtedly find a place in every library. *Wilder D. Bancroft*